Nutrition News

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DIET AND MALOCCLUSION

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When an individual's teeth are so arranged in the jaws that they do not function efficiently or when the teeth are crowded, protruding, or present an unpleasing alignment, he is said to have malocclusion. There are many factors responsible for this condition, some of them determined before birth and others that operate throughout life.

Many persons are prone to assign to heredity practically all forms of malocclusion because of the striking similarity often noted between tooth arrangement of parents and that of their children. There is little doubt that, in many cases, heredity does play an important role; in fact we all have a genetically predetermined facial pattern. Within this general pattern, however, are other patterns that develop because of such factors as nutritional disturbances, endocrine influences, pressure habits, delayed or premature loss of deciduous teeth, carious destruction of tooth structure, loss of permanent teeth, destruction of bone and soft tissues that support the teeth, and various metabolic disturbances.

Diet is important in helping to assure good occlusion of the teeth from three general standpoints. First, diet is important for the proper growth and development of the bones and teeth. Second, diet affects dental caries, and carious teeth and the loss of teeth through neglect of caries, can disturb the integrity of the dental arches and allow abnormal tooth movement. And third, diet is important to the continuous maintenance of the tissues supporting the teeth, by supplying essential nutrients and by providing the jaw muscles with the needed physical stimulation of chewing.

Growth and Development

Diet has a decided effect on the growth of the face and jaws and the positioning of teeth, for the growth and development of dental structures are integral processes of general body development. These processes are much too complex to allow one to relate specific nutritional causes and effects to malocclusion, such as a supposition that the absence of a certain dietary element might cause crowded teeth or that an adequate intake of another food might prevent poor tooth arrangement. Obviously these conjectures cannot be supported, but there are nutritional factors that we do know influence bone growth and tooth movement.

Retarded tooth eruption has been related by several investigators to severe deficiencies in vitamins A, C (ascorbic acid), and D and to deficiencies in calcium. Calcium and phosphorus have long been recognized as essential in not only building, but in maintaining good bone structure. Teeth depend heavily on the integrity of the bone and soft tissues surrounding them for their maintenance in functional occlusion. For the continuous replacement of the bone, connective tissue and epithelium surrounding the teeth, the diet should contain, daily, adequate amounts of vitamins A, B-complex, C and D, calcium, phosphorus, and protein.

Malocclusion and Caries

Teeth depend upon one another for the maintenance of their position in the jaws. Each tooth depends not only on adjacent teeth, but on its respective antagonist in the opposite arch. Therefore, the tipping of one tooth, its loss or even partial destruction may start a cycle of tipping and extrusion of many other teeth. Dental caries, then, can play an indirect role in building and maintaining good functional occlusion.

There are two known dietary factors that have pronounced effects on dental caries: sugar and fluorine. Whereas the frequent consumption of sugar has a deleterious effect on persons susceptible to dental caries, fluorine, actually a trace element in human nutrition, reduces profoundly the susceptibility of teeth to the carious process. Here we have the restriction of one dietary item and the addition of minute quantities of another element both contributing to dental health. The addition of fluoride to public water supplies has been found to be a practical, economical and effective method of providing this important element for growing children. Fluoridated water is now being made available to millions of persons in over 1100 United States communities.

Dr. Phair

A specific relationship between other dietary factors and dental caries has not, as yet, been clearly defined. But there has been much experimental work done with animals that would lead us to believe that caries resistant teeth might be built in humans through adequate nutrition during the development of the teeth.

Replacement of Supporting Tissues

The bone and soft tissues supporting the teeth are continually being replaced throughout life. The materials for this replacement must come from the diet, and when the necessary nutrients are not available, the integrity of these structures may be affected, the support of the teeth weakened and improper tooth movement made possible. The same dietary elements essential for growth and development of bone and soft tissues supporting the teeth continue to be essential for replacement throughout life.

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Glances AT NUTRITION RESEARCH

Knowledge of the composition of foods is basic to understanding nutrition and to planning dietaries. It is also basic to progress in food technology and related fields. These reports deal with new information about the composition of milk.

Immune bodies in milk—Milk may be a valuable medium for production of antibodies to protect man and animals against diseases from bacterial, viral, parasitic, and pollen antigens. Antibodies specific to a wide variety of disease antigens have been shown to be present in milk and colostrum from properly innoculated cows in concentrations as high as 120 times that in blood. Evidence indicates these: are produced locally in the udder; can be produced for a number of specific disease antigens at the same time without mutual interference; can be absorbed from the digestive tract of man and adult animals of several species; are active against the specific disease antigen for which developed, causing passive immunity; and activity can be preserved by proper techniques in pasteurization and drying.

—Lancet 75:494 (Nov.) 1955.

Casein-containing particles in milk—Up to 90% of the casein in fresh skim milk appears to exist as a single phosphoprotein, probably a combination of alpha-, beta-, and gamma-casein in ratio of 16:14:1. The phosphoprotein may be considered as combined with calcium and tricalcium phosphate. The minimum mol proportion of calcium: organic phosphorus: inorganic phosphorus is about 5:2:2. Inorganic phosphorus increases with increase in particle size. The largest casein-containing particle in milk appears to contain less organic phosphorus and some nonprotein substance.

—J. Dairy Science 38:843 (Aug.) 1955.

Amino acids in milk proteins—Amino acid composition has been determined for crystalline beta-lactoglobulin from low-temperature, spray-dried skimmed milk and for crystalline beta-lactoglobulin and alpha-lactalbumin from high-temperature short-term pasteurized milk. Amino acids which vary most in concentration in these milk proteins are: methionine, very low in alpha-lactalbumin; arginine, isoleucine, and leucine, lower in alpha-lactalbumin; histidine, lower in beta-lactoglobulin.

—Arch. Biochem. & Biophys. 55:315 (April) 1955.

Whey powders as source of protein—Lactalbumin is the primary protein present in whey since casein forms the curd in manufacture of cheeses. However, the crude protein in whey does not have as high a biological value as that of lactalbumin. Spray-dried powders have a higher nutritional value than roller-dried powders. The nutritive value of both is improved when fed with lactalbumin.

—Ag. and Food Chem. 3:333 (April) 1955.

Species differences in milk—Milks from the human, cow, sow, and rat show differences in the protein salt-free fraction. Lactose is present in all of the milks. Glucose is present in cow's, sow's and human milks. Galactose is present in cow's and sow's milks. These sugars are not present in rat's milk. Unidentified substances were found in the milks of all species: 11 in human, 10 in cow's, 8 in sow's, and 6 in rat's.

—J. Dairy Science 37:538 (May) 1954.

Editor's Note: Due to the timeliness of Dr. Phair's article, it is continued here from page nine, in the column usually devoted to Timely Topics.

It is a well known fact that exercise and normal function of the human body are essential if the tissues are to be maintained in a state of health. Function is an important stimulation to replacement and the chewing of food provides the function needed for the teeth, supporting bone, the soft tissues that surround the teeth and the muscles of mastication. Foods that require thorough mastication are essential to maintain healthy supporting tissues if the teeth are to be kept in their proper positions in the dental arch.

The Need for a Good Diet

Clinicians often relate diet to dental health only in terms of the obvious effects of deficiencies that can be noted by physical examination. Nutritional deficiencies may exist, however, and have deleterious effects on dental structures even though these effects may not be obvious in general clinical examination. It is possible that dietary factors may play an even more important role in malocclusion than the present limits of our scientific observations specify. It is, therefore, even more important to say that good diet is always necessary, not only for good occlusion, for strong bones or caries-free teeth. A good diet is necessary to good health—throughout life—for all tissues of the body.

Dr. Phair

Dr. Phair was formerly secretary of the Council on Dental Health of the American Dental Association. Previously, he headed the dental health section of the Washington State Health Department and served in the Navy Dental Corps. He is an authority on the development of community dental health programs, including fluoridation of water supplies. Dr. Phair is now engaged in private practice.

OUR PLANT HEALTH SERVICE CONDUCTS A WEIGHT CONTROL PROGRAM

By Jimmie Lou Wolf, R. N., Occupational Health Nurse
Continental Can Company, Inc., Chicago

The subject of weight is one of great interest to almost everyone. That is why the employees of our company were receptive to the idea of a Weight Control Program.

In April 1955 the plan was discussed during the General Safety Committee Meeting and a handout bulletin relative to weight control was issued to each committee member. A copy of this handout was sent to staff members and foremen and also posted on bulletin boards throughout the plant. In this way interest in the weight control project was stimulated among the employees.

As each person reports to the Health Service Department and indicates an interest in the diet plan, he is weighed, counseled, and given a diet publication. An individual weight file card is started for him.

His ideal weight is determined by consulting a weight chart. The consultant and the employee decide how much weight he desirably should lose.

The employee is counseled regarding the probable reasons for his excess weight. He often decides that excessive eating is his problem and realizes that it is the quantity of food consumed rather than the quality which is creating his problem.

Employees reporting for participation in the weight control plan are told that it is wise for them to consult their personal physician to make sure that their overweight is not due to causes other than excessive eating. They are also encouraged to recheck with their doctor as they lose weight. Regular blood pressure checks are made on the diet subject whenever advisable.

Next, in order that he may know the number of calories contained in various foods, he is given a diet information publication which contains nutritionally adequate menus that are palatable and low in calories. On the weight card initiated for the employee are recorded his present weight and the date he started the control program.

Finally, he is advised that he should return to Health Service once each week (preferably the same day of each week) to have his weight recorded. In this way a reasonably accurate check may be maintained.

Although the program was originally formulated for the purpose of weight reduction, there are some employees whose problem is that of being underweight. A similar weight control plan has been put into effect for them with the emphasis on gaining rather than losing. There are 21 members in this gain weight group.

In order to maintain a sustained interest in the weight control program, different nutrition information pamphlets and booklets are made available to the weight control club members each week. The handout rack for this available material is prominently located in the Health Service department. Attention is directed toward the rack by a notice on the diet nook bulletin board.

The favorable reaction of the employees at the beginning of this program plus the continued interest shown in the project, has been well worth the time and effort of establishing and maintaining the Weight Control Program in our plant.

Ninety-six of the plant's 250 employees are participating in the program. Of these, 21 are seeking to gain, and 75 are seeking to lose weight. Two of the latter group have lost about 25 pounds each. A gratifying outcome of the program is the opportunity to teach nutrition not specifically related to weight control, and also the increased interest of our employees of normal weight.

NUTRITION COUNSELING IN WEIGHT CONTROL

By Mame Dentler, formerly, Nutritionist
Montgomery Ward Clinic, Northwestern University Medical School

An informal conversation or get-acquainted period is an invaluable prelude to definite diet instruction in a conference on weight control. Indications of the patient's emotional attitude toward food and dieting and other valuable information may be divulged. The patient might be encouraged to discuss such topics as: when he gained the excess weight; why a control program is being embarked upon now; who initiated the idea; and the significance of food in his life. Insights from this discussion will help govern the trend the conferences should take.

The counselor should always be on the alert, not only during the initial session but also at subsequent visits, for casual remarks which may throw light upon the problem. The tone of voice, facial expression or promptness of reply may be revealing. Such conferences should be kept under the control of the counselor so that the patient does not monopolize the situation. However, a hurried attitude should be avoided.

The counselor should set the stage for the whole program at the initial conference. Points that might be explained at this conference are the importance of including essential foods in the diet to help keep the body in a good state of nutrition; the rate of weight loss to be hoped for; and a plan for helping decrease the appetite by using some of the foods needed in the diet for regular interval feedings.

Some understanding at the outset may help to relieve tension or fear of the strictness of the program. Early in the series of conferences, the counselor should make clear her role in the meetings, that of a resource person and guide, ready to answer questions and talk over problems, but not a big-stick or dictator.

If a qualitative nutritional history is taken, the patient should be given an opportunity to help with the evaluation. Such questions as "What do you think these answers show are some of your biggest problems?" or "What are some of the changes you may need to make in your eating habits?" will let the patient be his own critic.

The patient and the counselor together should plan the new diet or any necessary changes in the present one. The counselor may suggest choices, wherever possible, of foods the patient may prefer to have included. Decisions made by the patient and verbally stated are more likely to be carried out, and

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—that there are more than 800 varieties of cheese, but all of these can be classified into eight basic groups according to the way the milk is handled during manufacture?

—that the death rate in the United States during 1955 was about equal to that of 1954, the lowest on record, and that for eight consecutive years the death rate has been below 10 per 1000 population?

—that the use of trace amounts of an antibiotic to prolong freshness in uncooked poultry by hindering growth of spoilage organisms has been approved for commercial use?

—that last year, in its first year of operation, the special school milk program achieved an increase in consumption of 451 million half-pints of milk in participating schools?

—that frozen passion fruit juice, developed at the University of Hawaii, will soon be available in six-ounce cans?

—that ice cream consumption in the United States has more than doubled in two decades, rising to about 15 quarts per year for every man, woman, and child?

—that Minnesota, Wisconsin, Iowa, and Nebraska, in that order, are the four leading states in the production of butter?

THINGS YOU'LL LIKE TO READ

Nutrition Programs of Public Health Agencies—Nutrition Committee News, Sept.-Oct. 1955. U. S. Dept. of Agr. Washington, D.C.

This issue of Nutrition Committee News was prepared by nutritionists in the Public Health Service and the Children's Bureau. A resume of programs conducted by nutritionists of state and city health departments shows the scope of nutrition services in these agencies. Examples of nutrition activities were selected from the areas of maternal and child health, including school health and care of handicapped children, adult health, nutrition in institutions, nutrition research, and nutrition education for nurses and health educators.

Mary Meade's Kitchen Companion — Ruth Ellen Church. The Bobbs-Merrill Co., Inc., New York. 1955. $3.95.

Here is a book notable for its approach to planning and preparing nutritious meals. There are a multitude of ideas to make meal preparation enjoyable and rewarding for the homemaker. Family Service counselors and homemaking teachers will find that the author's sound, yet light and personal style will appeal to their homemakers.

Nutrition and Healthy Growth—U. S. Dept. of Health, Education, and Welfare, Children's Bureau. Washington, D. C. 1955. 20 cents.

This publication is a concise guide to child nutrition for the use of teachers, nurses, social workers, and others concerned with the health of children. It includes consideration of food needs as related to healthy growth from the prenatal period up through adolescence.

NUTRITION COUNSELING IN WEIGHT CONTROL

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place the responsibility upon himself. The clever counselor should be able to guide the trend of the consultation without the patient's being aware of it.

The number of dietary changes made and the amount of material presented at a single conference should depend upon the patient's ability to comprehend information and instructions, as well as his attitude toward making changes in his eating habits. Language and terminology used should be easily understood, and the patient not overwhelmed with scientific words.

The tone of all conferences should be kept in the positive. What a patient may include in the diet is of greater interest and more encouraging to hear than what he may not do. The "do" side should be presented before any possible remarks on the "do not" side. Then, soften any negative remarks which may be necessary by, "It will be better if you do not"—or, "Could you plan to . . ?"

Good practices in the present diet can be used as the basis for the new routine. Help the patient to understand that "Miracle" or "Fad" diets or special dietary foods are unnecessary and often ill-advised. Emphasis on calorie counting and restriction alone is undesirable if good health is to be maintained while the patient is on a controlled diet. Good well-rounded regimens and use of simple wholesome foods should be stressed as more satisfying and more sure to provide adequate nutrition.

The responsibility for carrying out the program should rest upon the patient. He should never be made to feel that his success is measured by pleasing the counselor. Keep the relationship on a level of friendly interest and cooperation and guide the patient in setting his own goal as to how much may be accomplished before each follow-up conference. Plan ahead to the time when a regimen to maintain any weight lost will be needed to replace the present stricter program.

Keep in mind the fact that the patient probably has a family. Efforts at following a regimen may be more successful if suggestions are given for gearing the diet around the usual family meal plan. It may be a golden opportunity to help instigate a better nutrition program for the whole family.